

CLAIMS

What is claimed is:

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1. A system for protecting power supply operation from a failure, the system comprising:
at least one power supply; and

a power backplane coupled to the at least one power supply, wherein the power backplane
includes a fail safe circuit that shutdowns the at least one power supply when a preset
10 threshold is exceeded and resets to resume normal operation following a temporary fault
condition.

2. The system of claim 1 wherein the preset threshold corresponds to 240 VA power level.

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3. The system of claim 1 wherein the fail safe circuit further comprises:

a switch coupled to a voltage signal line of a branch of a power supply system;

a current sense resistor coupled to the switch for detecting a failure condition in the branch;

and

a latch coupled to the current sense resistor and the switch for turning the switch off during
20 the failure condition.

4. The system of claim 3 wherein the fail safe circuit further comprises at least one
comparator coupled between the current sense resistor and the latch to set the latch during
the failure condition.

5. The system of claim 4 wherein the fail safe circuit further comprises combinational logic

coupled to the at least one comparator and the current sense resistor for outputting a shutdown signal when the switch is shorted.

5 6. The system of claim 5 wherein the combinational logic further comprises an AND gate.

7. The system of claim 5 wherein the fail safe circuit further comprises a current source coupled to the voltage signal line to supply a current between an input node and an output node of the fail safe circuit.

10 8. The system of claim 7 wherein the fail safe circuit further comprises a reset comparator coupled to the output node for providing a signal level to reset the latch.

15 9. The system of claim 8 wherein the reset latch turns the switch on for resumption of normal circuit operation following a temporary short circuit of the switch.

10. A method for protecting power supply operation from a failure, the method comprising the steps of:

(a) providing a fail safe circuit in a power backplane; and

20 (b) utilizing the fail safe circuit to shutdown at least one power supply when a preset threshold is exceeded and to reset and resume normal operation following a temporary fault.

11. The method of claim 10 wherein providing a fail safe circuit step (a) further comprises the steps of:

(a1) providing a switch coupled to a voltage signal line of a branch of a power supply system;

5 (a2) providing a current sense resistor coupled to the switch for detecting a failure condition in the branch; and

(a3) providing a latch coupled to the current sense resistor and the switch for turning the switch off during the failure condition.

10 12. The method of claim 11 further comprising the step of (c) providing at least one comparator coupled between the current sense resistor and the latch to set the latch during the failure condition.

15 13. The method of claim 12 further comprising the step of (d) providing combinational logic coupled to the at least one comparator and the current sense resistor for outputting a shutdown signal when the switch is shorted.

14. The method of claim 13 wherein the combinational logic further comprises an AND gate.

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15. The method of claim 13 further comprising the step of (e) providing a current source coupled to the voltage signal line to supply a fixed current between an input node and an output node of the fail safe circuit.

5 16. The method of claim 15 further comprising the step of (f) providing a reset comparator coupled to the output node for providing a signal level to reset the latch.

17. The method of claim 16 wherein the reset latch turns the switch on for resumption of normal circuit operation following a temporary short circuit of the switch.

10 18. The method of claim 10 wherein the preset threshold corresponds to 240 VA power level.

19. A power supply fail safe circuit comprising:

15 a switch coupled to a voltage signal line of a branch of a power supply system;
a current sense resistor coupled to the switch for detecting a failure condition in the branch;
and
a latch coupled to the current sense resistor and the switch for turning the switch off during the failure condition.

20 20. The circuit of claim 19 wherein the preset threshold corresponds to 240 VA power level.

21. The circuit of claim 19 further comprising at least one comparator coupled between the current sense resistor and the latch to set the latch during the failure condition.

22. The circuit of claim 21 further comprising combinational logic coupled to the at least one comparator and the current sense resistor for outputting a shutdown signal when the switch is shorted.

23. The circuit of claim 22 wherein the combinational logic further comprises an AND gate.

24. The circuit of claim 22 further comprising a current source coupled to the voltage signal line to supply a fixed current between an input node and an output node of the fail safe circuit.

25. The circuit of claim 24 further comprising a reset comparator coupled to the output node for providing a signal level to reset the latch.

26. The circuit of claim 25 wherein the reset latch turns the switch on for resumption of normal circuit operation following a temporary short circuit of the switch.